

2175/2002-

Appl. No. 10/082,570

28 July 2003

Reply to Office Action of 04/29/2003

IN THE CLAIMS

The following is a copy of pending amended claims in compliance with 37 CFR § 1.121. Support for the claims appears in the 'Remarks' section. Claims 1-10 are pending in the application. Claims 1-10 stand rejected. Claims 1 and 9 are amended below. This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- 1 1. (Currently Amended) A method for processing seismic data comprising:
- 2 (a) ^{bst}comparing determining a difference for data in a window comprising a
- 3 portion of a first data segment with data in a corresponding window
- 4 comprising a portion of a second data segment, wherein said first data
- 5 segment and said second data segment are selected from a plurality of data
- 6 segments acquired using a plurality of seismic sweeps; and
- 7 (b) ^{3rd}changing said data in a window using said data in a corresponding window
- 8 based on said comparison difference. ^{? 1st or 2nd}

- 1 2. (Original) The method of claim 1, wherein changing said data in a window further
- 2 comprises replacing said data in a window using said data in a corresponding
- 3 window. ^{? 1st or 2nd}

- 1 3. (Original) The method of claim 1 further comprising stacking said plurality of
- 2 data segments to form a new data segment.

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1 4. (Original) The method of claim 3 further comprising extracting a listen time from
2 said new data segment.

1 5. (Original) The method of claim 1 wherein said plurality of data segments each
2 comprise a recorded data and a listen time.

AI
2nd
1 6. (Original) The method of claim 1 further comprising phase shifting said second
2 data segment to a phase corresponding to said first data segment.

1 7. (Original) The method of claim 1 wherein said second data segment comprises a
2 combination of a plurality of said plurality of data segments.

1 8. (Original) The method of claim 7 wherein said combination comprises combining
2 said plurality of said plurality of data segments using at least one of: i) an
3 arithmetic average, ii) a median average, and iii) a weighted average.

1 9. (Currently Amended) The method of claim 1 further comprising using RMS
2 values for ~~comparing~~ determining said difference in said data in a window of a
3 first data segment with said data in a window of a second data segment.

1 10. (Original) The method of claim 1 wherein a listen time data segment is combined
2 with an initial data segment by time series addition.

REJECTION UNDER 35 U.S.C. § 102(e)

Claims 1-10 stand rejected under 35 U.S.C. § 102(e) as being anticipated by *Fleure* in US Patent 6,418,079.

With regard to Claim 1: The Examiner's position is that *Fleure* discloses the limitation of comparing data by correlating a first low frequency reference signal with the first low frequency sweep and its associated listening gate 110a-110b that appears in the zone denoted by 210a and 210b. We respectfully point out that the term "correlating" is a term of art used in the *Fleure* disclosure that refers in each instance to the cross-correlation of two time-series data sequences, in this case the acquired data time series (e.g. low frequency sweep and its associated listening gate) with the reference sweep time series (e.g. low frequency reference signal). We have amended Claim 1 by replacing 'comparing' with 'determining a difference.'

Support for 'determining a difference' is in paragraph 27 on page 13 and 14 of the instant application. As stated in paragraph 27:

In order to detect coherent noise, the data of the different data segments are compared. **A difference** between a target data segment and one or more of the other data segments **is determined** for the comparison. While numerical differences between data segments may be determined directly, comparing data measures of the data segments provides better sensitivity. In the preferred embodiment, the different data segments are compared using data measures within short time windows (for example windows ranging in length between 4ms to 500ms) using root-mean-square (RMS) values **209**. The root-mean-square may

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be defined as the square root of the average of the squares of the samples within the data population, with the data population being the samples in corresponding data windows. Other data measures may be used for comparison within short windows, for example, measures of data power or data magnitude averages.
[Emphasis added]

As is apparent from this description, 'determining a difference for data' in currently amended Claim 1 of the instant application is not prior art cross-correlation. The result of the *Fleure* prior art cross-correlation is a third time series, whereas 'determining a difference for data' in the present disclosure can result in data measures that may be compared to threshold values prior to the currently amended Claim 1 step of "changing said data in a window using said data in a corresponding window based on said difference." The "changing said data" can result in a third time series, but the changed data are not the output of cross-correlation as used in *Fleure*.

The Examiner's position is that *Fleure* further discloses ... changing data in the overlap step 410 using the filter windows 425a-425d and stacking the combined signals 430 in figure 5 with the sweep segments in line 14 column 4 combined with the listening times in lines 5-60 of column 4. In *Fleure* this is a disclosure of the well known prior art steps of filtering and stacking. However, this filtering and stacking is not based on a difference that is determined from data segments as called for in the present application. As we have pointed out above, in the *Fleure* disclosure there is no 'determining a difference for data' as disclosed in paragraph 27 and elsewhere of the instant application.

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The filtering and stacking of the *Fleure* disclosure not based on any data differences between sweep segments.

In order for a claimed invention to be unpatentable under 35 USC § 102 over a prior art reference, the prior art reference must show each and every limitation of the claimed invention arranged as in the claim. The 'determining a difference for data in a window comprising a portion of a first data segment with data in a corresponding window comprising a portion of a second data segment, wherein said first data segment and said second data segment are selected from a plurality of data segments acquired using a plurality of seismic sweep' limitation of currently amended Claim 1 is clearly lacking in the prior art of *Fleure*. Likewise, the 'changing said data in a window using said data in a corresponding window based on said difference' limitation of currently amended Claim 1 is also clearly lacking in the prior art of *Fleure*. Accordingly, applicant respectfully submits that currently amended Claim 1 and Claims 2 – 10 that depend upon Claim 1 are patentable under 35 USC § 102.

Furthermore, none of the prior art of record teaches or suggests a method for processing seismic data comprising determining a difference for data in a window comprising a portion of a first data segment with data in a corresponding window comprising a portion of a second data segment, wherein said first data segment and said second data segment are selected from a plurality of data segments acquired using a plurality of seismic sweeps and changing said data in a window using said data in a corresponding window based on said difference. In order to sustain an obviousness


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rejection under 35 USC § 103, two requirements must be met. First, the prior art of record must disclose all the limitations of the claimed invention. Additionally, there must be a suggestion in the prior art of record to combine the limitations as in the claimed invention. The suggestion to combine these limitations is clearly lacking in the prior art of the present case. Accordingly, applicant respectfully submits that Claim 1 is patentable under 35 U.S.C. § 103 over *Fleure*. Further, applicant respectfully submits that currently amended Claim 1 and the claims that depend on Claim 1 are patentable under 35 U.S.C. § 103.

No new material has been added by this office action response. Consideration of the application, as amended, is respectfully requested. No fee is believed to be due for these amendments. The Commissioner is hereby authorized to charge any fee due for these amendments to Deposit Account No. 50-1720 (594-25573).

Respectfully submitted,

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